

Application No.: 10/531,697**RECEIVED
CENTRAL FAX CENTER****DEC 26 2007****REMARKS****I. Introduction**

In response to the pending Office Action, Applicants have amended claims 1 and 4-9 in order to overcome the 37 C.F.R. § 1.75(c) and 35 U.S.C. § 112 rejections and to further clarify the subject matter of the present disclosure. Support for the amendment to claim 1 may be found, for example, in Table 1, on page 5, lines 10-11 and page 10, lines 9-11 of the specification. No new matter has been added.

Applicants respectfully submit that all pending claims are patentable over the cited prior art for the reasons set forth below.

II. The Rejection Of Claims 1-5 Under 35 U.S.C. § 102/§ 103

Claims 1-5 are rejected under 35 U.S.C. § 102(e) as being anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Matsuba et al. (US 2004/0004209 or WO 02/035554). Applicants respectfully submit that Matsuba fails to anticipate, or render obvious, the above cited claims for at least the following reasons.

With regard to the present disclosure, claim 1 recites an electrically conductive paste comprising main components including a metal powder, a glass frit, and an organic vehicle, wherein the metal powder comprises spherical particles (A) having an average primary-particle diameter of 0.1 to 1 μm and spherical particles (B) having an average primary-particle diameter of 50 nm or less, and the content of spherical particles (A) is in the range of 50 to 99 wt % and the content of spherical particles (B) is in the range of 1 to 50 wt % relative to the total amount of metal particles; the content of the glass frit is in the range of 0.1 wt % to 15 wt % to the total

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amount of the glass frit and the metal powder; and the organic vehicle contains a cellulose resin or an acrylic resin.

One feature of the present disclosure is that the conductive paste is a sintering-type conductive paste containing either a cellulose resin or an acrylic resin. As described in Matsuba, sintering type corresponds to thermally decomposable resins. Commonly, this means that the binder resin is vaporized during the baking step, usually at a temperature of about 500 to 600° C, thereby removing the resin from the printed circuit. Shrinkage of the paste occurs, which results in a higher adhesion between metal particles and improvement of the conductive property of the paste. In the present disclosure, the baking step is performed at a temperature of about 450-500° C, which results in a paste having reduced stress, even when applied with a large thickness. This is because normally when a sintering-type paste is applied with a high degree of thickness, residual stress may occur in the film after the baking step, which has an adverse effect on the substrate.

In contrast to the present disclosure, Matsuba describes a conductive past which contains a thermosetting resin as an organic binder. In this type of conductive paste, the binder resin remains in the paste after the baking step, due to the relatively low baking temperature (i.e., 200° C). As a result, the paste of Matsuba will not exhibit equally favorable qualities as described above.

Another feature of the present disclosure is that the conductive paste has metal powder and glass frit at specified average primary-particle diameters and weight percentages relative to the total amount of metal particles. These features allow the paste of the present disclosure to have excellent conductivity characteristics. In contrast, Matsuba is silent with regard to the

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diameters and weight percentages of the metal particles and glass frit. Accordingly, Matsuba does not disclose all of the limitations of claim 1.

As the Examiner is aware, anticipation under 35 U.S.C. § 102 requires that each element of the claim in issue be found, either expressly described or under principles of inherency, in a single prior art reference, *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 218 USPQ 781 (Fed. Cir. 1983). Moreover, in order to establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 180 USPQ 580 (CCPA1974). As Matsuba fails to disclose an electrically conductive paste comprising main components including a metal powder, a glass frit, and an organic vehicle, having the above cited concentrations and sizes, and that the organic vehicle contains a cellulose resin or an acrylic resin, it is clear that Matsuba fails to anticipate, or render obvious, claim 1. Therefore, it is respectfully requested that the rejection of claim 1 under § 102 and § 103 be withdrawn.

III. All Dependent Claims Are Allowable Because The Independent Claim From Which They Depend Is Allowable

Under Federal Circuit guidelines, a dependent claim is nonobvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims, *Hartness International Inc. v. Simplicatic Engineering Co.*, 819 F.2d at 1100, 1108 (Fed. Cir. 1987). Accordingly, as claim 1 is patentable for the reasons set forth above, it is respectfully submitted that all pending dependent claims are also in condition for allowance.

IV. Conclusion

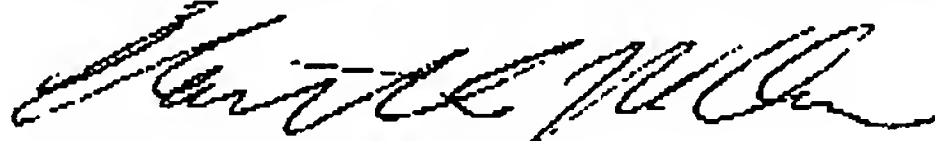
Having fully responded to all matters raised in the Office Action, Applicants submit that all claims are in condition for allowance, an indication of which is respectfully solicited.

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To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

McDERMOTT WILL & EMERY LLP



Nathaniel D. McQueen
Registration No. 53,308

600 13th Street, N.W.
Washington, DC 20005-3096
Phone: 202.756.8000 NDM:MWE
Facsimile: 202.756.8087
Date: December 26, 2007

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